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A30508

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23 APR 2004

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Registered in England: 1800000

Patents ADP number *(if you know it)*

~~1867002~~ 6300388001

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COMPUTER-TELEPHONY INTEGRATION

5. Name of your agent *(if you have one)*

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8772378001

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Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

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Continuation sheets of this form	-
Description	- 07
Claim(s)	- 02
Abstract	- 01
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Signature(s) Date:

23 April 2004

BRADLEY, David William, Authorised Signatory

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Computer-Telephony Integration

The present invention relates to computer – telephony integration and in particular to a method and networks for improving the handling of telephone calls in the public switched telephone network (PSTN) when such calls arise from a computer network.

The "Parlay" collaboration between a number of telephone and computer network providers resulted in the development of an interface to enhance the capability of the internet, in particular by allowing "click to dial" facilities. Thus a user of a web browser (for example "Netscape" or "Windows Explorer" could view a service provider's web page and be presented with a clickable icon to contact a specified telephone. The user's computer being associated with a PSTN telephone number allows a message to be sent through the internet to an application server which interfaces with a service control point (SCP) of the PSTN and transmits the user's telephone number (the "A" party number) and a number derived from the service providers clickable icon (the "B" party number).

The application server provides protocol translation between the TCP/IP used by the internet and the signalling system of the SCP. A basic explanation of Parlay APIs (Application Protocol Interfaces) can be found at:

http://parlay.org/docs/04b_Parlay_Overview_Flyer_Final_Protected.pdf

Therefore it is known to provide an application protocol interface which allows a web page designer to incorporate clickable connect call buttons into the web page without concern as to the inter-operability of the internet (world wide web) with the fixed telecommunications network.

When a click to connect button is selected the gateway transmits to the SCP the user information mentioned above which is used by the SCP to transmit instructions to a Service Switching Point (SSP) an instruction to connect the A party telephone in the local loop and to cause ringing signals to be applied to that phone. When the A party answers the SSP sends a message to the SCP confirming the A party answer which enables the SCP to instruct the ringing of the B party telephone which may be done at the same SSP or at a remote SSP. On B party answer the connection is established through the network so that full communication is established through the PSTN between the A party telephone and the B party telephone.

A problem arises in certain circumstances once the SCP has sent the first instruction to the SSP primarily because the signalling protocol does not allow the SCP to know the transaction identity assigned by the SSP to the call set up process unless or until an "event" associated with the call set up process occurs. Thus, in the SCP a transaction identity is assigned to the instruction to commence ringing of the A party telephone. This transaction identity is used by the SCP throughout the establishment and monitoring of the call and messages between the SCP and the SSPs always include the transaction identity as an originators identification or "OID". Return messages from the SSPs will have a different OID being the transaction identity associated with the call by the SSP and a "DID" or destination identity which equates with the OID assigned by the SCP.

Subsequent messages sent from the SCP to the SSP can then contain a DID equivalent to the OID assigned by the SSP which enables the SSP to be instructed to do something in relation to the call set up. Specific instruction to do something in connection with the call cannot be delivered until an OID assigned by the SSP becomes known to the SCP for use as a DID.

Once the SCP has instructed the initial call set up, until either the A party answers or a timeout on ringing occurs there is nothing for the SSP to report so instructions in relation to the call cannot be sent until one of those two events occurs. Consequently, if the user wishes to modify the call set up (for example by clicking on an alternative icon in the computer display) while the Parlay API may forward the change instruction message to the SCP the SCP is unable to act upon the revised request and must either queue the request until an event report from the SSP or, as is more likely, will ignore the request.

According to the present invention there is provided a telecommunications network including at least one service control point and a plurality of interconnected service switching points, said service control point being responsive to signals received from a gateway to another network to cause a call to be set up between two or more termination points of the telecommunications network, the service control point sending a first instruction message to one of the service switching points to cause a connection to a first of said two or more termination points characterised in that the service control point sends a further instruction embedded in the message to the same service switching point, said further instruction forcing a response from that service switching point whereby an identity assigned by the service switching point to action embedded in the first instruction message is captured by the service control point whereby further instruction signals

nodes, for example, telephones 5 and 6.

network must pass through the internet 8 to another node present on the internet called an API (or Application Protocol Interface) 13. The API 13 operates with a sub-set of the

Parlay protocol referred to as Parlay-X protocol which enables a limited number of features selected from the features available for full control of the licensed operators network. Thus on receipt on of the request to connect which will feature a number for the user's telephone 6 derived from, for example, a cookie held on the user PC 11 and the number of the telephone 5. The API 13 on receipt of the request will forward a converted instruction to the SCP 7 which can then set up the call.

If the user of the PC 11 now determines that the call should not be made at the present time and clicks the cancellation button this too will generate a cancellation message or abort message transmitted by the PC 11 through the internet 8 to the API 13. The API 13 will in turn forward the abort message to the SCP 7.

The process for establishing a call is shown in Figure 2 in which signalling between the API 13, SCP 7, SSP 4 and the local switch 14 to which the user phone 6 is connected in the network are shown. As shown in Figure 2 the protocol used between the API and SCP is a Parlay-X protocol, INAP/TCAP being used between the SCP 7 and SSP 4 and an IUP protocol being used between the SSP and the local switches to which it is connected. Thus, when a user requests a third party call via the world wide web 8 (not shown) the API 13 transmits a make a call instruction to the SCP 7. The SCP in response to the instruction sends an initiate call attempt (ICA) message to the SSP which includes a request for a report of any basic call state model (BCSM) event and is flagged with a TC begin and a unique originator ID, a numerical identifier of the process now being started at the SCP 7.

On receipt of the initiate call attempt instruction the SSP 4 forwards an initial final address message (IFAM) to the local switch to which telephone 6 is connected so that the local switch sets up a call to the that telephone. Several messages may be interchanged between the SSP 4 and the local switch 14 to enable completion of the connection at the local switch, the local switch calling for additional call information and receiving that call information from the SSP4 until a complete node address for the telephone 6 has been received. Once the complete address has been received by the local switch 14 telephone 6 will have a ringing current applied and the local switch will forward an address complete message to the SSP4.

While the information exchange and ringing continues between the SSP 4, the local switch 14 and the telephone 6 the SCP 7 does not have information concerning the progress of the call since a basic call state model event has not occurred so that there is no report back from the SSP 4 to the SCP 7.

request can be acted upon by the SCP 7 since it now has a required originating ID from the SSP 4 to enable an abort message to be transmitted from the SCP 7 to the SSP 4.

CLAIMS

1. A telecommunications network including at least one service control point and a plurality of interconnected service switching points, said service control point being responsive to signals received from a gateway to another network to cause a call to be set up between two or more termination points of the telecommunications network, the service control point sending a message including a first instruction to one of the service switching points to cause a connection to a first of said two or more termination points characterised in that the service control point sends a second instruction embedded in the message to the same service switching point, said second instruction forcing a response from that service switching point whereby an identity assigned by the service switching point to action embedded in the first instruction is captured by the service control point whereby further instruction signals received from the gateway prior to receipt by the service control point of an event message from the service switching point can be used by the service control point to send a modifying instruction message to the service switching point.

2. A telecommunications network as claimed in claim 1 in which the gateway is present on a connectionless network and interfaces between the connectionless network and the telecommunications network to transfer instructions from a computer terminal of the connectionless network thus enabling a call connection in the telecommunications network to be originated by the computer terminal.

3. A telecommunications network as claimed in claim 1 or claim 2 in which the first instruction received by the service control point includes the identity of two termination points of the telecommunications network, a first of which is associated with the originating computer terminal and the other of which is derived from a page of information being viewed on the computer terminal.

4. A telecommunications network as claimed in claim 1, claim 2 or claim 3 in which the first instruction transmitted by the service control point causes a ringing instruction to be transmitted to the first termination point.

5. A telecommunications network as claimed in any preceding claim in which the second instruction requests charging information to be returned.

6. A telecommunications network as claimed in any one of claims 1 to 4 in which the second instruction contains an invalid instruction to the service switching point to cause the return of an associated query message.

7. A telecommunications network as claimed in any preceding claim in which the subsequent instruction received from the gateway is a cancellation instruction which causes the service control point to transmit an abort message to the service switching point to effect cancellation of the call in progress.

8. A telecommunications network as claimed in any preceding claim in which the the connectionless network is an intranet or the internet, the gateway being responsible for converting protocol between the connectionless network and the connection oriented network.

9. A telecommunications network as claimed in any preceding claim 8 in which the connection oriented network is the PSTN. 5.

ABSTRACT

Computer-Telephony Integration

The invention provides a modification to the operation of the intelligent network instruction set whereby on transmitting an Initiate Call Attempt message between the SCP 7 and an SSP 4 an instruction is included which forces the SSP 4 to send a response message whereby the identity assigned to the actions requested is known to the SCP 7 prior to the occurrence of a BCSM event at the SSP.

Figure 1

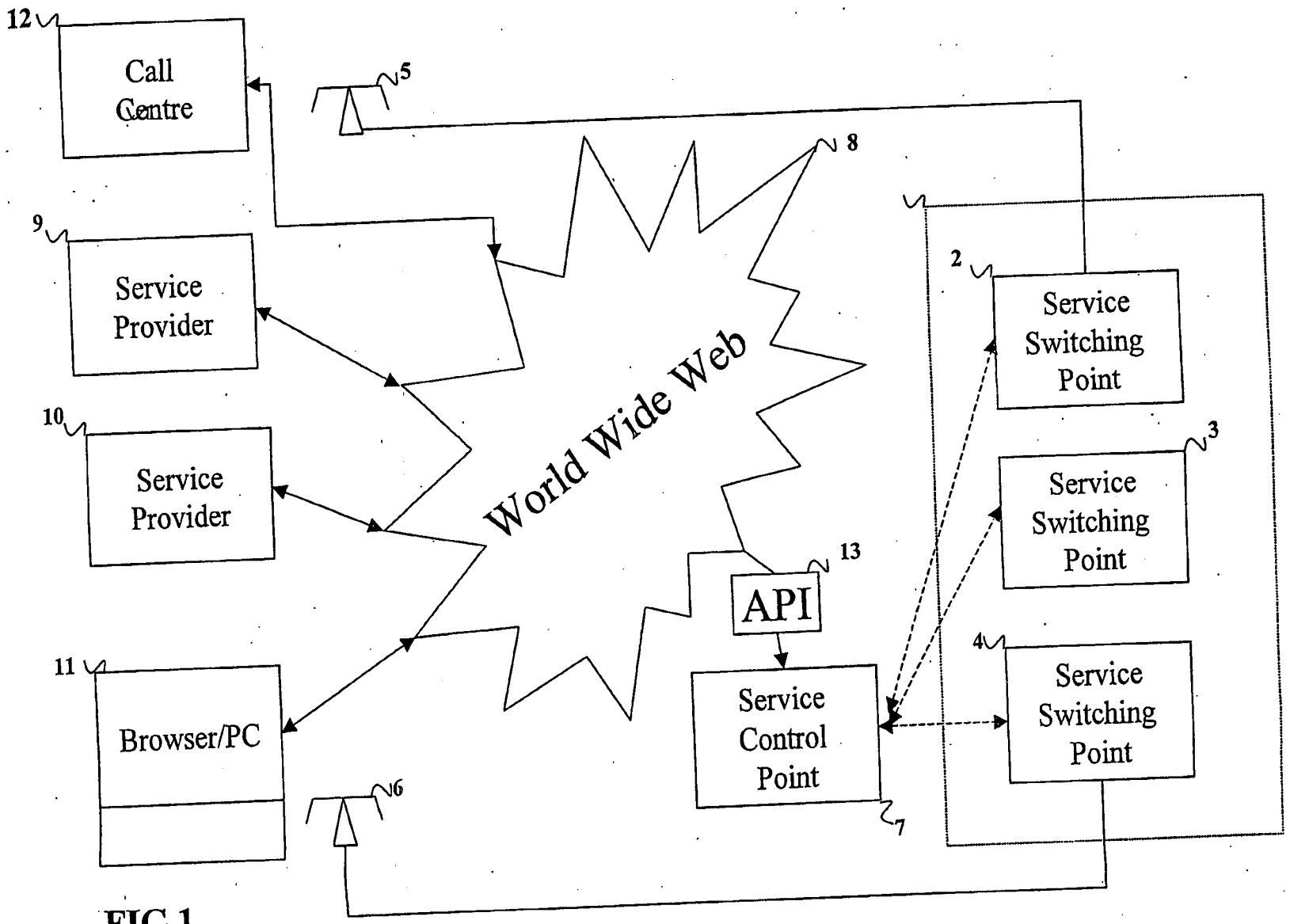
12
Call Centre
5
8
9
Service Provider
10
Service Provider
World Wide Web
2
Service Switching Point
3
Service Switching Point
13
API
4
Service Switching Point
11
Browser/PC
Service Control Point
7
6

FIG 1

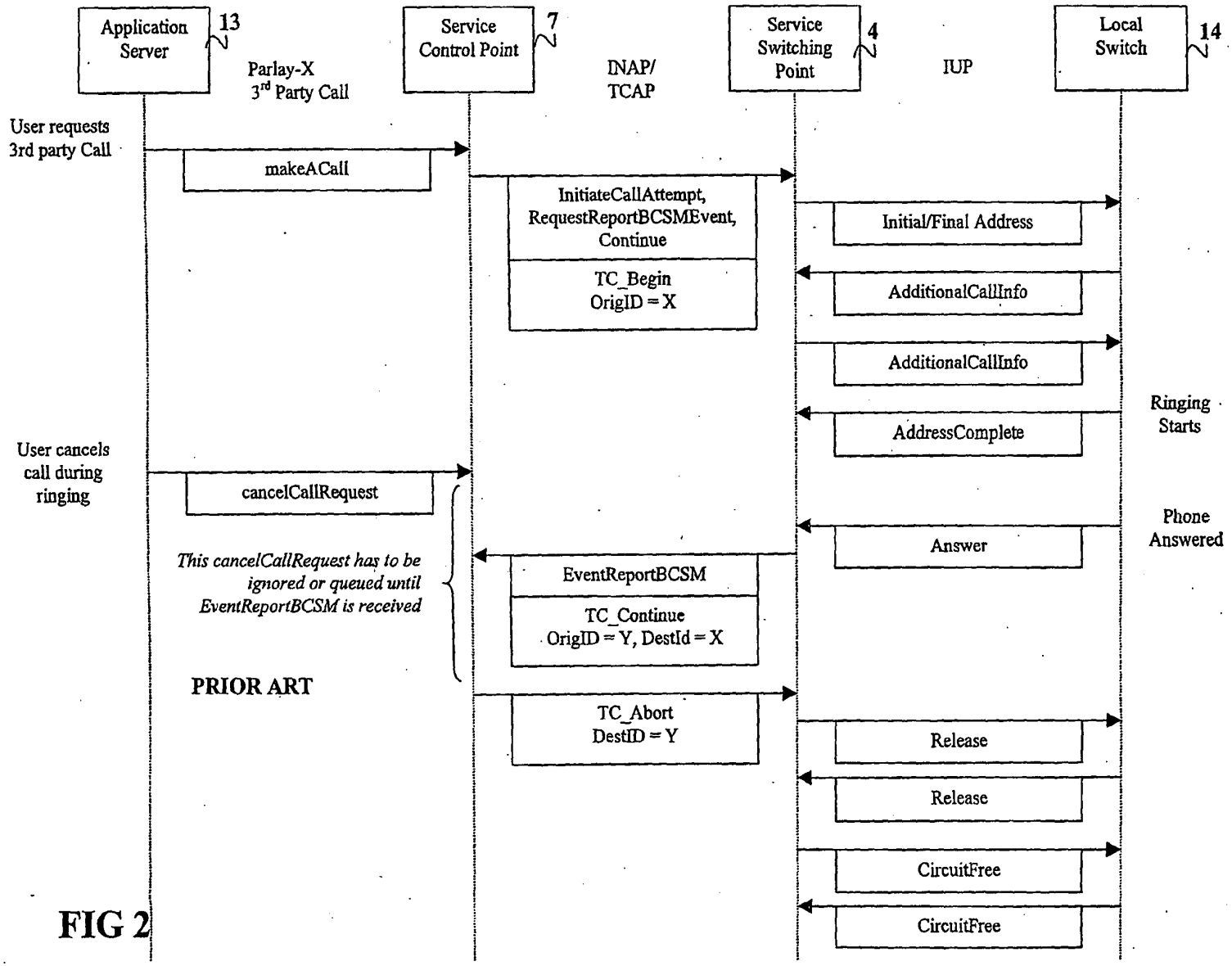
Application Server
13
Parlay-X
3rd Party Call
Service Control Point
7
INAP/
TCAP
Service Switching Point
4
IUP
Local Switch
14
User requests 3rd party Call
makeACall
InitiateCallAttempt, RequestReportBCSMEvent, Continue
TC_Begin
OrigID = X
Initial/Final Address
AdditionalCallInfo
AdditionalCallInfo
Ringing Starts
AddressComplete
User cancels call during ringing
cancelCallRequest
Phone Answered
Answer
This cancelCallRequest has to be ignored or queued until EventReportBCSM is received
EventReportBCSM
TC_Continue
OrigID = Y, DestId = X
PRIOR ART
TC_Abort
DestID = Y
Release
Release
CircuitFree
CircuitFree

FIG 2

New Call F

User requ
3rd party

User can
call duri
ringing

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